

Annual Conference 2017

3–6 APRIL, EICC, EDINBURGH, UK



@MicrobioSoc
#Microbio17

Filamentous fungal biofilms in drinking water distribution systems

NELSON LIMA (University of Minho, Portugal) | Tinto Level 0

11:00 - 11:30 Thursday 06 April Morning

Abstract

Recent investigations on water microbiology have shown that most of the biomass present in the drinking water distribution system (DWDS) is located at the pipe walls as biofilms. Biofilms are organized in highly efficient and stable ecosystems and can be viewed as a survival mechanism; this way of life can provide protection from chemical, biological or physical stresses. Biofilms in DWDS are constantly associated with loss of water quality and play a major role in the accumulation, protection and dissemination of pathogens through the net. Although filamentous fungi are especially adapted for growth on surfaces, fungal water biofilms have received less attention when compared with bacterial biofilms, thus remaining a lack of information in this field. Therefore, the aim of this work was to assess and characterise the presence of filamentous fungi in DWDS and the kinetics of fungal biofilm formation. Using suitable techniques, i.e., calcofluor white M2R to detect the fungal walls, fluorescent in situ hybridisation (FISH) for fungal in situ detection, microtiter plates to promote the fungal biofilm formation, crystal violet for biomass and resazurin staining for metabolic quantifications it is possible to detect filamentous fungal biofilms in DWDS and study the biofilm formation over time. The kinetic of biofilm formation shows the typical sigmoidal curve with noticeable different phases including induction, exponential, stationary, and sloughing off. In addition, the metabolic activity and biomass of the fungal biofilms increase over time and a correlation between metabolism, biofilm mass and hyphal development was found.

Speaker

In 1993, Nelson got his PhD in Engineering Sciences (Biotechnology) at the University of Minho (Braga, Portugal) and in March 2004 he was appointed Full Professor of the University of Minho. Nelson's primary research is related to food and environmental mycology with integration of polyphasic approaches for fungal identification. Since 1996, he has been the Head of Micoteca da Universidade do Minho (MUM) fungal culture collection and was a member of the executive board of WFCC from 2007–10 and Collection Officer of ECCO from 2003–06. Currently, Nelson is the President of ECCO. He has been partner of Portuguese, EU and Brazilian research funding projects and evaluator in several funding agencies. He has supervised 24 PhD and 30 MSc theses. Nelson has more than 300 publications. He is an Invited Professor in various Brazilian universities. In March 2016, he was granted the title of Professor Honoris Causa by the University Federal of Pernambuco (UFPE, Recife, Brazil).